



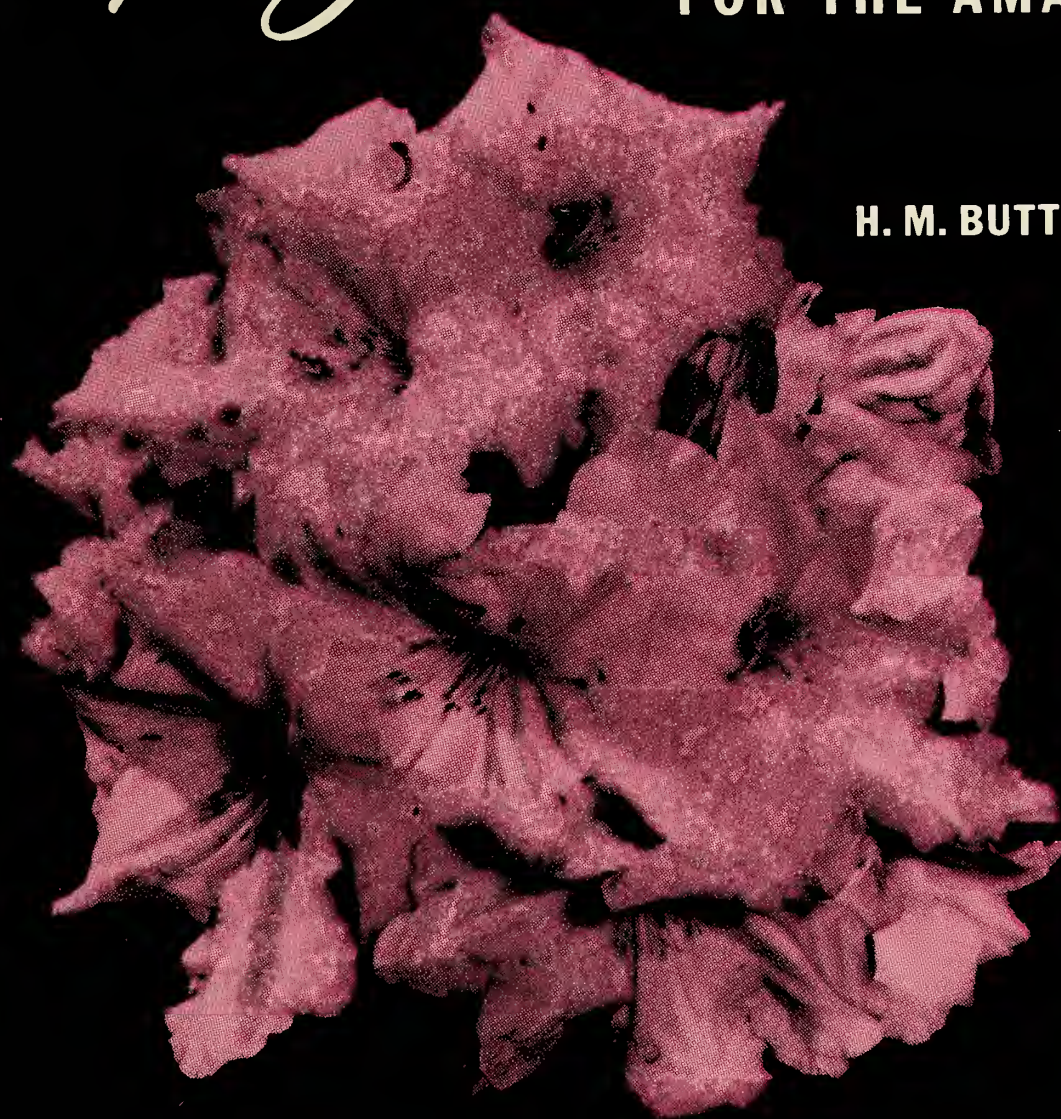
Division of Agricultural Sciences

UNIVERSITY OF CALIFORNIA

# *Rhododendrons and Azaleas*

**FOR THE AMATEUR**

**H. M. BUTTERFIELD**



CALIFORNIA AGRICULTURAL  
Experiment Station  
Extension Service

**MANUAL 21**



# 7

HERE IS no exact botanical distinction between rhododendrons and azaleas. Both belong to the genus *Rhododendron*. The common name "rhododendron" is applied mainly to the evergreen species with large, bell-shaped flowers, while the common name "azalea" is arbitrarily applied to certain species and their hybrids, both evergreen and deciduous, with flowers that are relatively smaller, usually flared or funnel shaped.

Nursery catalogs list the varieties under separate headings, with indications whether the varieties are evergreen or deciduous. This is also done in the tables appearing at the end of the manual.

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Rhododendrons may be grown in the filtered shade of pine trees. The pine needles are used as mulch.

**THE AUTHOR:**

H. M. Butterfield is Agriculturist Emeritus, Agricultural Extension Service, Berkeley.

**MAY, 1956**



## Rhododendrons and Azaleas Have Specific Needs in Climate, Location, and Soil

**Climate.** A moderately cool climate, free from excessively hot sunlight, is best for rhododendrons and azaleas. Where winter months are very cold only hardy varieties should be planted. Most rhododendrons and azaleas can stand the ordinary winters common to the valleys and the coastal areas of California. However, the Indian azaleas do not grow very satisfactorily in cold climates; and many of the popular evergreen azaleas are sensitive to frost at flowering time. Some consideration must therefore be given to winter temperatures.

**Location.** Both rhododendrons and azaleas need a location that provides sun half the day, yet offers protection from

hot afternoon sun. Some azaleas need shade almost continuously if they are to grow and flower well. Neither group should be exposed to wind or drafts.

Rhododendrons can be planted in the filtered shade of pine trees. Against this backdrop their foliage and blossoms are strikingly beautiful, and the plants like the mulch of pine needles.

**Soil.** A well-drained, slightly acid soil is best, although rhododendrons and azaleas do fairly well in California soils that are about neutral in reaction if other growing conditions are favorable. It is more important for the soil to be well fertilized, drained, yet supplied with moisture at all times than for it to be acid.

### Planting Depends on Two Steps: Preparing the Plant and Preparing the Soil

The time to set out rhododendron and azalea plants in most parts of California is from January to March. This is just before new growth pushes out but after the soil has dried enough to permit easy working.

**The plant.** Some plants are sold in cans or pots, but most come from the nursery balled—that is, the soil is left around the roots and covered with burlap. If the ball of earth has dried out, it should be soaked in water for several hours before it is planted. Soaking the entire ball in a tub of water before planting is more satisfactory than attempting to water the plant sufficiently after planting. The string which ties the burlap around the crown of the plant is cut, but

the burlap itself is left around the ball.

**The soil.** The planting hole should be a little larger than the ball of earth encasing the roots. A hole 18 × 18 inches is large enough for the usual small rhododendron plant. Plant no deeper than necessary to cover the roots. Fill in the hole with a peaty or leafmold soil mixture. Well-rotted leafmold from the oak, madrone, and redwood, which generally is acid, is suitable. A mixture of 2 or 3 parts loam, 1 part peat or leafmold, and 1 part sand may be used, or equal parts of leafmold and soil. Firm the soil mixture and after planting, water well to settle the earth about the roots. New roots should start within a few weeks. Pruning is not necessary at planting.

If the soil is heavy, drainage can be improved by mixing in leafmold or peat moss well in advance of planting.

**The rooted cutting.** Both rhododendron and azalea cuttings which are

rooted by any of the propagation methods, when ready, are planted in the same preparation of soil as the balled or canned specimen. The size of hole is gauged by the size of the rooted cutting.

## Cultural Practices for Both Rhododendrons and Azaleas Emphasize Watering and Fertilizing

**Watering.** The soil mixture for rhododendrons and azaleas should never reach the wilting point—that is, where the growing tips remain wilted for longer than 12 hours. Enough water is given to moisten the deepest roots. To maintain adequate moisture about the roots during dry summer months, water twice a week in locations near the coast and more often farther inland. Each year a new mulch of moist leafmold, pine needles, or peat moss placed about the plants will keep the surface roots cool in hot weather. This mulch needs frequent watering.

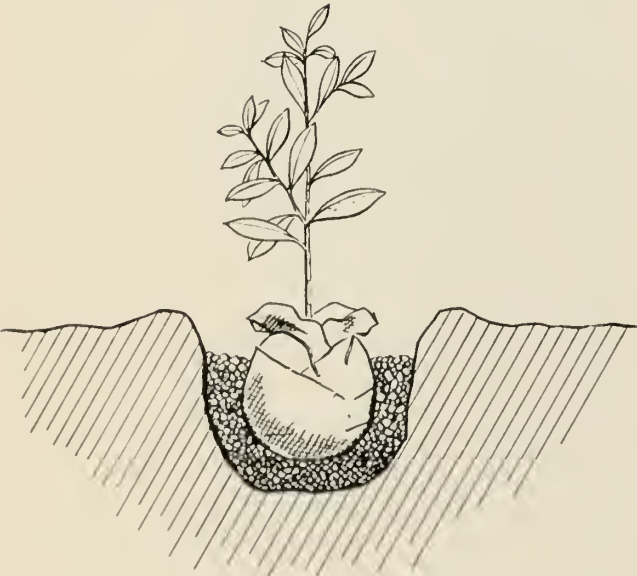
**Weeding.** No cultivation is required for either rhododendrons or azaleas, but all weeds should be removed.

**Fertilizing.** Older rhododendron and azalea plants need fertilizing. Soil norm-

ally deficient in nitrogen may be fertilized from time to time with limited amounts of cottonseed meal, blood meal, fish meal, fish oil emulsion, or tankage. Nitrogen should be in the form of ammonia rather than nitrate, since nitrate tends to cause yellowing of the leaves and poor plant growth. Ammonium nitrogen, which is liberated slowly over a period of time, is usually absorbed by the plants in the form of ammonia.

The continued use of barnyard manure is objectionable unless an acid-forming material is used to neutralize excessive alkali. However, a small amount of cow manure occasionally used around rhododendrons aids in maintaining good growth.

The soil reaction may range between pH 5.0 and pH 5.5, although it is known that some of our native rhododendrons and azaleas are thriving in soils that are alkaline. A considerable latitude in the range of pH value is permissible. Cottonseed meal has served well as a fertilizer. If an acid-type fertilizer is used and we know that rhododendrons and azaleas tolerate an acid soil condition, the following acid-type mixture, which checks closely with a 4-6-8 fertilizer mixture, may be used:



The balled plant is placed in the hole. The encircling space is filled in with leafmold and soil.

	<i>Pounds</i>
Superphosphate . . . . .	35
Cottonseed meal . . . . .	28
Potassium sulfate . . . . .	17
Ammonium sulfate . . . . .	10
Aluminum sulfate (to acidify mixture) . . . . .	10
	—
	100



It is rarely possible for the home gardener to test his soil for soil reaction or lime content; however, soil chemists may be hired to make such a test. With our present knowledge that azaleas and rhododendrons tolerate a wide range of pH value, it is impossible to say definitely that a certain range is essential. If there is a high lime content in the soil it may lead to a form of chlorosis and plant decline. Such an unfavorable soil condition may need correction or the plants may need to be transplanted to a more favorable soil. Acidifying materials may be added in some instances to overcome damage from high lime content or some of the iron chelates may help insure adequate iron.

Fertilizer is applied at the rate of 1 teaspoon of a 6 per cent nitrogen fertilizer for a well-established plant with a 6-inch spread. This amount should adequately maintain healthy growth. The application may be repeated at intervals of eight weeks during the early growing season.

The practice of adding commercial aluminum sulfate at the rate of  $\frac{1}{4}$  to  $\frac{1}{2}$  pound per square yard of soil surface to acidify the soil has been popular in recent years. As a permanent practice this is somewhat questionable, because free aluminum may injure the roots of rhododendrons and azaleas.

Theoretically, some acid-forming material such as sulfur, which does not contain aluminum, is a better selection. Ammonium sulfate serves the same purpose, but since it would probably be changed quickly to a nitrate, it would be less satisfactory than certain other chemicals which would be changed to a nitrate form more slowly. Acid potassium sulfate, acid phosphate, and tannic acid have been suggested for trial.

Sulfur may be applied in moderation in the late fall to help produce an acid condition of the soil. It is more effective than aluminum sulfate as an acidifier, although the latter reacts more quickly. Only about half as much sulfur as aluminum sulfate is necessary to produce correct soil acidity.

**Saving the declining plant.** Rhododendron and azalea plants beginning to decline usually can be saved. If the exposure is satisfactory, the plant may be lifted in the fall or late winter, before new growth pushes out, and the soil renovated. Sometimes a good surface mulch and a dressing of fertilizer are sufficient without lifting the plant. If the plant is in the wrong location, however, it should be moved to a more suitable place in the garden. No soil treatment or change of location will take the place of liberal watering.

## Pruning Regulates Size or Height, Maintains Good Flowering, and Eliminates Unsatisfactory Parts

Try to keep the pruning goals in mind while cutting, especially when shaping. This is difficult when cutting to eliminate diseased, weak, or dead parts. Adapt pruning to the growth habits of each plant.

### **RHODODENDRONS**

**Tall rhododendrons.** Only a few home gardens have room for the older

popular varieties, such as Pink Pearl, Alice, and Cynthia, which usually grow to a height of 6 feet or more. The grower may have been told that these rhododendrons should not be pruned. This is only partly true. Certainly such varieties should be shortened in a little each year to keep the plants from becoming tall and leggy, but not more than a third of the branches are cut back in any one year.

At this rate of pruning, it would take almost three years to shorten an entire plant. If pruning is judiciously done each year—cutting back of only a few of the taller canes—there should be no need for very heavy pruning in any one season.

At about the time the flowers begin to fade and just before rank new growth pushes out, the canes to be pruned are cut back just above a bud. On such varieties as Alice and Pink Pearl the actual time of pruning should be in early May. (See table 3 for height and blooming period.) A healthy plant sends out a new shoot from the dormant bud just below the cut, and this new shoot may need two or three years in which to form normal flower buds, although healthy flower buds can be expected to appear ultimately on all such canes that are cut back. By limiting the amount of annual cutting to a moderate pruning it will be possible to have a satisfactory crop of blooms each season. At the same time, taller rhododendrons will fit more precisely into the space available and the blossoms will be seen to much better advantage. Very old canes that are weak or diseased should be removed at the point of origin on the main branch or trunk.

**Irregularly shaped rhododendrons.** Not all rhododendron varieties are regular in shape. For example, *Fragrantissimum* is one of the Himalayan hybrids resulting from a cross between *Rhododendron ciliatum* and *R. edgeworthi*. The plant of this hybrid is inclined to be irregular in shape unless it is properly pruned from the time it is small. By pinching out a branch tip here and there during the first two or three years, it is possible to train the growth into a well-shaped shrub. As the plant reaches blooming size, pinching-out should be discontinued, except for an occasional branch that must be shortened to retain the compact form of the plant. Usually this hybrid and its rela-

tives respond well to light pruning (table 3).

**Compact species.** Another group of rhododendrons produced by hybridizing *Rhododendron augustini* and similar species has furnished gardeners with such popular varieties as Blue Bird, Blue Diamond, and Blue Tit, which reach a height of 6 feet. The bushes of this group become compact and form clumps covered with flowers. As the plants reach full maturity, shoots occasionally weaken and produce thin, weak-flowering twigs. When this happens, the entire branch should be cut back to ground level and replaced by new shoots. This group of rhododendrons will even tolerate shearing at any arbitrary height, although it is better to thin out weakened old branches than to cut back blindly.

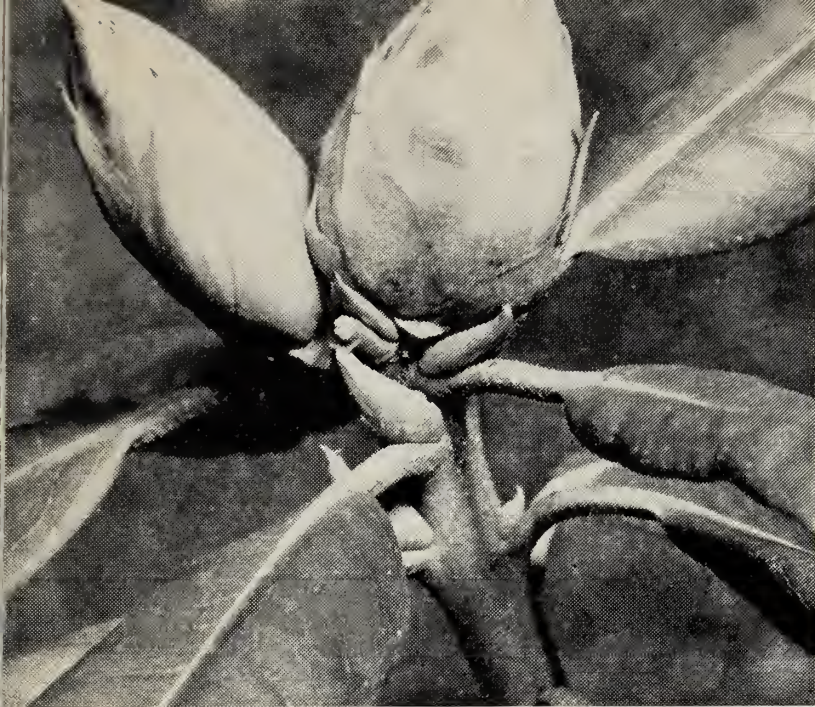
**Dwarf rhododendrons.** Still another group of rhododendrons includes the dwarf species and hybrids listed in table 4. These small shrubs tend to form a mat or thicket, and may be grown in a rock garden or in front of taller kinds. Their size and height should be controlled to fit the environment. Many of these shrubs are weakened by seed formation. The plant may be headed back slightly as the blooms fade. If it has too many dead or weak branches, the entire plant should be cut back just above ground level and a new head allowed to form. In this group of dwarf plants cutting back to just above ground level is better than trying to thin out the growth.

## AZALEAS

The azalea fancier usually tries to select species and varieties that easily conform to a planned size and form, but he may also do some pruning and shaping to insure this. The plant may be left to take its natural shape or it may be pruned and trained to a standard, to a cascade, or to espalier form.

Gardeners with limited time should not try to prune and train plants into





Swollen rhododendron flower buds with new leaf buds starting below. At right are pointed leaf buds on terminal rhododendron growth.

special forms. They should simply keep them in good shape by a little tipping of the longer new shoots and perhaps a little thinning to encourage better flower bud formation. Diseased or weak growth is removed. The time to prune heavily is immediately before new growth pushes out, but the tipping of new shoots can be done any time early in the growing season. Heavy pruning far into the growing

season may encourage late growth which will not have time to develop flowering wood. Therefore, most of the pruning should be completed reasonably early.

**Standard azalea.** Azaleas to be trained as standards must make rapid upright growth. This is secured by potting vigorous varieties in a loose, fertile potting mixture, and giving them frequent feeding. Fish emulsion is fed

*Rhododendron impeditum* is a blue-flowered dwarf of spreading habit which is fine for rock gardens.





weekly to the plants by some growers, but other fertilizers containing nitrogen will serve the same purpose. The potted plants are then set where they will have some shade.

The plants are encouraged to make upright growth. Laterals on young plants are pinched out for approximately one year, by the end of which time suitable varieties should have reached a height of about 5 feet. The tip is then pinched out to induce the formation of laterals near the top and thus form a head which will flower later. Since the plant will probably need at least another year for development of a healthy top and a large trunk, it is a good plan to support the new trunk with a stake to insure a straight standard and to protect against possible breakage in the wind. Local nurserymen can give information about available azalea standards.

Many azalea fanciers are not satisfied with the flowers on a vigorous rootstock, and so will endeavor to topgraft the specimen plant to a more desirable variety. This is not a job for most amateurs, but with proper equipment and skill, topgrafting can be successful. Plants to be topgrafted should be potted and handled in a greenhouse where air moisture and temperature can be controlled easily during the period when the scions are uniting. Side grafts may be inserted about February or March, or before new growth pushes out. Veneer grafts are also used. After the scions have united and started to grow, they must be shaped to develop a good head which will flower well. By selecting certain varieties, such as *Crimson Glory* (Bobbink and Atkins variety), *Fielders White* (Indica variety), and *Mme. Van der Cruyssen* (Indica variety), the grower can anticipate a fine standard plant.

**Cascade azalea.** For cascade effects, the azalea is planted in a hanging pot or basket, where the growth can be trained in either a short or a long cascade and

allowed to form flowering wood along the cascading growth. A variety such as *Vivid* (scarlet Sander variety) is suitable for cascade training. Vigorous new growth is encouraged so that the shoots will tend to trail down naturally. A filtered light at the beginning will encourage cascade growth.

The stems are held in position with temporary wires. A single strand of 10- or 12-gauge, galvanized iron wire, some 3 feet long, is sufficient at first, but as training continues, additional wire, 4 feet long, will have to be inserted. Commercial plant ties or raffia can be used to tie the stems to the wire supports. When the cascade pattern is completed, the plant is removed to a location with more light, where the flowers can develop. Little or no flowering can be expected while the plant is being trained in a shady location.

**Espalier azalea.** Espaliers involve still more attention. If a grower does not have plenty of time and patience he should not attempt this form of training.

Any vigorous, upright azalea or rhododendron can be trained to espalier form. The plant is first encouraged to form a single upright stem to a little above the necessary height. The top is then pinched out to insure the formation of laterals along the stem. Laterals are selected to build the desired espalier form, and all other laterals are kept subdued. The side laterals may be supported with wires or wooden crosspieces until they are able to stand alone. Under suitable conditions the plant in time will form flowering wood along the laterals, but it may take two or three years for flower buds to form. Unless the plant is vigorous, it probably will not produce enough laterals to make a satisfactory espaliered form. Once the espalier is established, the grower must continue year after year to pinch back unwanted new shoots in order to retain the form. This necessary requirement of the espalier process takes time and patience.



## Potted Azaleas Need Special Planting Techniques and Adequate Care

Potted azalea plants usually are forced for early flowering. They are an especially popular sales item in flower shops at Christmas and Easter. After the plants have flowered, they may be transplanted to a sheltered place in the garden, where they should flower again the following year; or they may be set outside in the container, preferably under the edge of a tree or tall shrub which can furnish filtered light. The pot may be sunk in soil to prevent rapid drying. Under favorable conditions the plant may then form flower buds and be ready to take back into the house at the next flowering season.

It is possible for azaleas in pots or large containers to grow satisfactorily for several years if they are given adequate care and sufficient root room.

**Kinds to plant.** Only certain kinds of azaleas are forced for the florist trade. These are primarily the Belgian Indicas, which are ideal for that purpose.

Plants grown in pots during the summer are especially well suited to greenhouse forcing. Field-grown plants may be lifted and potted for flowering later on. In such cases, greenhouse operators select varieties with considerable care to be certain that the plants, when grown, will stand up well under normal shipping conditions. Some azalea varieties used for potting do not remain in good condition after long shipment. Often these are varieties more suitable to open-garden planting. However, the Belgian Indicas, so widely used for forcing, are far less satisfactory in the garden than are some other kinds of Indian azaleas that do not force well.

The more popular potted azaleas available just before Christmas usually are Belgian Indicas and such other early, potted varieties as Albert Elizabeth, Paul

Schame, Simon Mardner, Vervaeneana, and various color forms. Fanciers may also be interested in some of the potted Kurume varieties, such as Apple Blossom (Howo), Christmas Cheer, Coral Bells, Hinodegeri, and Snowbird. Azalea specialists will have many other fine varieties for winter and spring bloom. The fancier will need to decide whether to continue to grow the plant in a container or to transplant it to a favorable spot in the garden.

**Potting mixture.** This mixture should contain some acid leafmold, such as oak leafmold. Acid peat moss may replace the leafmold, although leafmold is better. Many azalea plants continue to thrive in a mixture containing a large percentage of well-rotted leafmold or a considerable proportion of granulated peat. These ingredients are low in plant food, however, and cannot be expected to maintain sufficient fertility to keep the potted plants in satisfactory flowering condition indefinitely.

A fertile loam soil made slightly acid with leafmold should comprise perhaps 50 per cent of the potting mixture. Many growers prefer to use  $\frac{2}{3}$  soil and  $\frac{1}{3}$  leafmold. Avoid any appreciable amount of lime in the mixture. The leafmold serves more as a soil conditioner than as a source of plant food. If the potted azalea is to be transplanted to the garden, the original potting mixture may well contain up to 50 per cent leafmold and 50 per cent fertile loam soil. Sand may be used in the potting mixture, but it is not essential if the soil is light in texture to start with.

**Watering.** The potted azalea should be kept where the flowers will remain in good condition as long as possible. If the plant is forced and later hardened off, it may thrive in an ordinary cool

room or on a porch free from draft. Water the plant at intervals to maintain a moderate supply of soil moisture. Once or twice a week may be sufficient under many conditions if the air is not too dry. Avoid watering too often or keeping the soil continuously saturated. Sudden wilting of the flowers or leaves usually indicates that something is wrong with the system of watering.

**Fertilizing.** If the soil in the pot is fertile at planting, it should not need fertilizer. If the soil is deficient, however, it may need a moderate amount of an acid-type fertilizer containing nitrogen. Apply this to the potted plant at the beginning of the growing season, well in advance of the forming of flower buds. If the plant is overstimulated, it may form an abundance of new growth without many flower buds. Actual experience under local conditions is necessary to determine when and under what condi-

tions fertilizer should be added to the potted plant. One-fourth teaspoon of ammonium sulfate (20 per cent nitrogen) should be sufficient for one application to two 6-inch potted plants. If a mixed acid fertilizer containing only about 6 per cent nitrogen is used, from  $\frac{3}{4}$  to 1 teaspoon of fertilizer should be sufficient for a 6-inch potted plant at each application. The roots should be active at the time the fertilizer is applied in order to give the best response. This is from about February or March to May and June.

**Drawbacks to potting.** There are two drawbacks to transplanting an azalea from the field to a pot. Many feeding roots are certain to be lost in the move. Also, the plant may fail to form flower buds the next season unless growing conditions are favorable, although buds usually formed by the time the plant is transferred to a pot should open well after potting.

## Propagation of Rhododendrons and Azaleas Usually is Impractical for the Amateur

**Seed.** Only a few gardeners are equipped to grow rhododendrons and azaleas from seed, and only a small percentage of the seedlings will be as good as the parent plant. Seed may be sown under glass in a finely sifted, peaty mixture that is acid in reaction. Seed also may be sown in a nutrient agar. The seedlings later are transplanted to pots, where they may require several seasons to reach flowering size.

**Cuttings.** Propagation from cuttings is difficult, usually successful only when done by an experienced grower. Young green cuttings of azaleas,  $2\frac{1}{2}$  to 3 inches long, are taken in the early growing season at about the time the flowers fade. Rhododendron cuttings should be longer (see opposite page).

Cuttings may root in as short a period as three to four weeks or may take up to six weeks in a greenhouse, depending upon the growing conditions and the nature of the cutting used. Temperature and humidity must be carefully controlled. An electric hotbed and frame are usually essential, with a bottom temperature of 70° to 75° F. The rooting medium may be a mixture of coarse river sand and sifted peat—or a similar mixture—that is slightly acid in reaction. Frequent sprinkling during the rooting period may be necessary to keep the cuttings from drying out, especially when the outside air is dry.

**Layering.** Some amateurs root cuttings outdoors but cuttings will probably take a year or more to root, whether





Type of growth that should be used for making a rhododendron cutting.



An evergreen azalea showing new growth suitable for making a cutting.

## IF YOU DO TRY TO PRODUCE YOUR OWN, USE CUTTINGS

Rhododendron cuttings rooted in a flat and showing new growth.  
Lower leaves were cut to allow more room in flat.





## HERE ARE THE STEPS

Rhododendron cutting with well-developed roots. Roots undeveloped are easily damaged in transplanting.

Left, rhododendron cutting with established roots, ready to set out; right, azalea cutting rooted and plant pinched back for compact form.



started outdoors or inside a house. A quicker and more certain method for the amateur is to layer a low branch for rooting. With the stem notched or girdled just below the point where roots should appear, then covered with moist soil, roots form after several months up to a year. The rooted layer may then be removed and treated like a rooted cutting.

**Air-layering.** This means of propa-

gation has come into use for species and varieties of both rhododendrons and azaleas that are very difficult to root from ordinary cuttings. A plastic wrap is lined with moist sphagnum moss, and the inner side is dusted with a hormone powder which aids root formation. The sphagnum moss should be thoroughly wet, then squeezed fairly dry before it is placed in the plastic wrap. A healthy growing



tip on the plant is selected. Its bark is either girdled just below the point where roots should form or a tongue is made on either side, cutting back about 1½ inches toward the tip. The tongue is held apart with a small wooden match or piece of wood so that the cut edges will not grow together quickly. The aerial wrap is finally placed around the stem in the area where roots are expected to develop, and is tied snugly above and below. The sphagnum moss should remain moist for at least three months. Under favorable conditions, roots will

form in the zone of the girdle or tongue, and the wrap can be removed. The aerial cuttings are then severed and treated like any rooted cutting. This method of propagation is used during the early growing season when the wood is soft. If the wood is too hard, the air-layered tip will not root readily, if at all. Perhaps air-layering should be limited to plants which are not easily propagated in any other way.

**Grafting.** The method for grafting is essentially the same for both rhododendrons and azaleas. A shaded greenhouse or propagating frame is used. Here,



A healthy growing tip on the plant is chosen for the placing of the plastic wrap.

under glass, temperature and moisture are more easily controlled than in the open.

For grafting rhododendrons, seedlings of certain popular species, such as *Rhododendron ponticum*, are grown and transplanted to pots. *R. maximum* and *R. catawbiense* have also been used successfully as rootstocks. Grafts known as saddle, veneer, or side may be used. If the wood of the rootstock is very hard, the graft will not take readily. Plants grown under glass or under lath for a few weeks in advance of grafting are more likely to develop a soft wood which is easier to graft. Winter-grafting will

probably be more successful than summer-grafting, although it is possible to veneer-graft successfully in summer. Air humidity is easier to control early in the year than during the dry summer months. The summer may be too warm for such grafting.

Azaleas, especially the Belgian Indicas and the hardy Southern Indicas, are often grafted on a vigorous root, such as *Vinacea Coccinea*, a large, fast-growing single. Kurume azaleas do not have to be grafted. Grafting on a vigorous rootstock helps to insure a better root system, better growth, and more buds and flowers.

## Diseases\* of Rhododendrons and Azaleas Are Caused Chiefly by Soil Conditions or Soil Microorganisms

The causes of rhododendron and azalea diseases frequently can be corrected by changing the cultural conditions under which the plants are growing. There are, however, several diseases which attack the aboveground parts of the plant and these are controlled by chemical sprays.

As was mentioned before, both rhododendrons and azaleas do best in a light, well-drained soil. Since many California soils are heavy, with a high moisture-holding capacity, planting in them usually results in serious problems.

**Water-mold root rot.** Under extremely wet soil conditions a group of soil fungi known as water molds will attack the roots and crown area of young plants and cause a disease known as wilt, root rot, or water-mold root rot. Affected plants wilt and the leaves become a dull green. This is followed by leaf drop

and a permanent wilting. The main stem turns brown at the soil line; a cut into this area reveals only dead bark and wood.

Since this disease usually attacks only young plants growing in excessively wet soil, it is easily controlled by providing good soil drainage before the plants are set out. In a heavy soil it is especially advisable to avoid digging a hole or pit even though it is to be filled with a soil mixture of the desirable type for the plant. Such a hole acts as a pocket to catch the water and provides the conditions favoring disease development. Other control practices include adjustment of the soil pH to between 4.5 and 5.5 and avoidance of planting too deeply.

**Armillaria root rot.** A disease also favored by wet conditions is oak root fungus or *Armillaria* root rot. Infected plants are unthrifty in appearance, and frequently go into a permanent wilt. The disease is most easily diagnosed by cutting into the bark of the crown and larger roots. If the fungus is present, there are large white fans or plaques be-

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\* Section on diseases by Robert D. Raabe, Assistant Professor of Plant Pathology and Assistant Plant Pathologist in the Experiment Station, Berkeley.





Oak root fungus, or Armillaria root rot, is indicated by white fans or plaques between the bark and the hardwood. (Courtesy Department Plant Pathology.)

tween the bark and the hard wood and frequently small, dark, shoestring-like strands on the outside of the bark of the infected roots. Mushrooms in the late fall or early winter are another indication of the fungus.

Once the oak root fungus becomes established, it is very difficult to control. In a diseased area, the plants can be removed and the soil treated with carbon bisulfide. This treatment is hazardous in garden areas where plants are grown close to one another, however, because the chemical will kill all the plants or roots in the treated area. Exposing the crowns of infected plants to air may help to prolong the plant life since the fungus cannot exist under dry conditions. Because the fungus does thrive in wet, heavy soils, improving the drainage and avoiding too much water will help to prevent infection.

The question has frequently risen as to whether or not the oak root fungus can be introduced by leafmold brought into the garden. There is little chance of

its being in leafmold which consists entirely of leaves but if any woody material is included it may be present.

If in doubt about leafmold, spread it out and let it dry thoroughly before using it. The oak root fungus cannot tolerate dry conditions and will die.

**Rhizoctonia cutting and graft decay.** Another soil-borne disease problem is cutting and graft decay which results from infection by the soil fungus *Rhizoctonia solani*. In moist cutting or grafting frames, this fungus attacks primarily the tops of the plants and grows over the leaves and stems as a cobwebby growth. Under moist conditions it will cause a decay of the infected plant parts, while under drier conditions it may cause a rot at the base of the cuttings. It is controlled by using sterilized soil or sand in the cutting beds and by avoiding the use of too much water. If the disease does break out, a drenching with thiram will help to control it.

**Lime-induced chlorosis.** Several diseases are the result of a soil condition rather than the attack of a disease-producing organism. One of these is known as lime-induced chlorosis, or simply chlorosis. In this disease, the leaves, particularly those at the tip of new growth, turn pale green or even yellow. Frequently the leaf margins and the tissues between the veins turn a lighter color while the veins retain the darker color.

Lime-induced chlorosis is caused by a soil condition that is produced by too much lime or too basic a soil reaction. This makes certain elements, particularly iron, unavailable to the plants. This can be corrected temporarily by sprinkling sulfur on the soil around a plant or by spraying the leaves with iron sulfate ( $\frac{1}{2}$  part, by weight, to 100 parts of water). Spraying the leaves with iron sequestrene (as directed by the manufacturer) is also an effective control.

None of these controls is permanent and must be repeated. A more lasting



control is the incorporation of organic material, such as peat moss or well-rotted leafmold, into the soil.

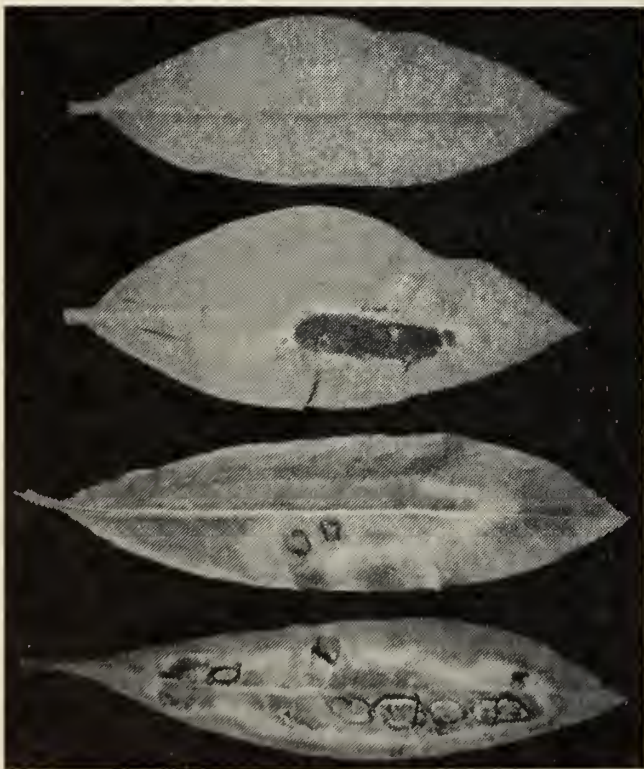
**Salt injury.** Salt injury is another disease resulting from a soil condition and frequently is common where plants are grown in containers. The symptoms include browning and death of the tissues around the margins of the leaves. Frequently leaves may yellow and on some plants small dark or purplish warty growths or bumps may appear on the under surfaces of leaves. Salt injury is controlled by giving the plants an occasional heavy watering to leach away excess salts which have accumulated in the soil. If the plants are in small containers and can be handled easily, soaking them overnight in a tub of water is effective.

**Root injury.** Frequently root injury results from hoeing or cultivating the soil around azaleas and rhododendrons. These plants are surface feeders—meaning the roots which absorb water and nutrients are found very near the surface

of the soil. Therefore, it is best to disturb the soil around the plant as little as possible.

**Sun scald and leaf spots.** One disease arising from troubles aboveground that is more prevalent some years than others is sun scald. This is found more often on rhododendrons than on azaleas. It appears as large brown areas in the center of the leaves. Sufficient shade is the best control. Certain varieties stand more sun than others; this should be considered when setting out plants. Hardening off new plants from nurseries frequently prevents injury to the leaves. Although sun scald in itself may not be too serious, the injuries it causes look bad. Furthermore, injuries allow the entrance of certain fungi—weak parasites—which do not enter healthy plants, but having gained a foothold are capable of causing great damage.

Several fungi are found associated with injuries resulting from sun scald, excess salt, insects, and fungus infections. These fungi produce spots on the foliage

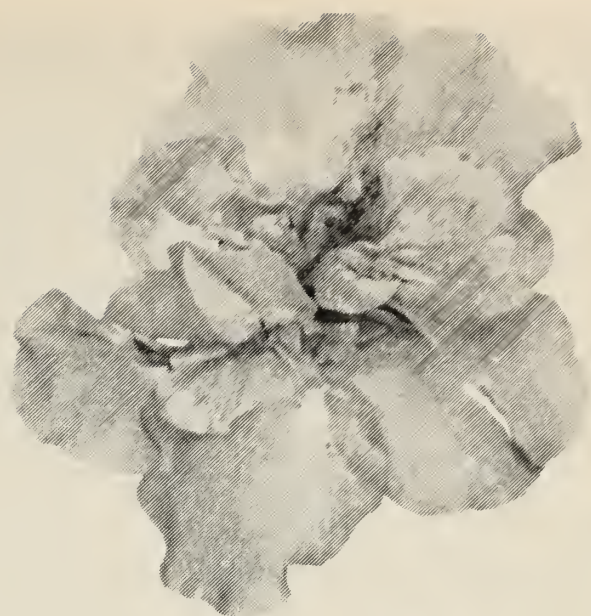


Sun scald appears as large brown areas in the center of rhododendron leaves more often than on azalea leaves. (Courtesy Department Plant Pathology.)



Azalea leaf scorch produces dark, reddish-brown, angular areas on the leaves, which fall prematurely. (Courtesy Department Plant Pathology.)





Azalea petal blight appears as small pale spots on the inner surfaces of colored petals and as brown spots on white petals. (Courtesy Department Plant Pathology.)

which are silver gray on the upper surface and light brown on the lower surface. The upper surface may be dotted with small black spots which are the fruiting bodies of the organisms. Silvery spots may also be produced on the stems. Control is brought about indirectly by avoiding sun scald and salt injury and by controlling insects and disease-producing fungi.

**Leaf scorch.** A fungus disease of azaleas known as leaf scorch is sometimes found in California, especially in wet seasons or in foggy areas. The disease, resulting from infection by a fungus known as *Septoria azaleae*, appears as dark, reddish-brown, angular areas on the leaves and causes them to fall pre-

maturely. Although not nearly so prevalent, there is a similar disease on rhododendrons caused by a closely related fungus. These fungi are controlled by spraying with either Bordeaux mixture (2-2-50) or ferbam at about two-week intervals as the new leaves expand during the growing season or when the diseases appear. Destruction of the fallen leaves helps to prevent spread of the fungi.

**Azalea leaf gall.** One of the more common diseases of azaleas, which at times may be serious, is the azalea leaf gall. This disease is the result of a fungus infection which causes the leaves to become thickened and fleshy, either wholly or in part. The infected areas in the leaves turn pale green, pink, or white. The



flower parts of some species may transform into hard, fleshy, waxy, irregular galls. The infected parts later may be covered with a white bloom which consists of spores of the fungus. Control by removing and destroying the infected parts. Spray with a weak Bordeaux (3-1-50) or zineb.

**Azalea petal blight.** The most serious disease attacking azaleas is azalea petal blight, also known as azalea flower spot and *Ovulinia* flower blight. Although found only in nurseries for many years, it recently has been reported occurring in home plantings in California. The disease is found primarily in the southeastern part of the United States, where it is particularly severe on azaleas of the *Kurume* and *Indian* types. The fungus causing this disease attacks only the flowers of the azaleas and, infrequently, the flowers of closely related plants, such as rhododendron and mountain laurel.

Azalea petal blight appears as small pale spots on the inner surfaces of the petals of the colored flowers and as brown spots on the white flowers. These spots rapidly enlarge until the whole flower collapses. The rot produced is very soft and mushy in contrast to *Botrytis* rot of old flowers, which is a dry rot. Eventually the flowers collapse and fall.

In the diseased flowers small, dark, flat, or cupped structures develop. These are the resting bodies of the fungus, which serve to carry it through seasons when the azaleas are not in flower. They fall to the ground with the flower and remain there until weather conditions favorable to the flowering of the azalea again are present. At this time they germinate to produce little cups from which spores are shot. These spores, once on an azalea petal and in the presence of moisture, germinate to produce an infection. Secondary spores form in the infected flowers to spread the disease under favorable conditions.

Azalea petal blight is controlled by avoiding overhead watering while the plants are in flower. If the disease becomes established, spraying the flowers three times a week with zineb plus a spreader-sticker helps in the control. Removing and destroying diseased blossoms tend to keep the resting stage from carrying the fungus from one year to the next. Covering the beds with several inches of mulching material also helps to keep the resting structures free of spores. Indoor potted plants, which are so difficult to spray, should be especially protected from this disease. However, by growing azalea plants under conditions of low humidity, the disease will not become established nor spread.

### Pests\* Include the Privet Mite, Cyclamen Mite, Greenhouse Thrips, Azalea Leaf Miner, and Black Vine Weevil

The azalea is host to all of these pests, and the rhododendron is attacked by some of them. Fortunately, not all of the pests appear at one time, and only a few justify much attention. However, gar-

deners should recognize them and start adequate control if the pests appear.

**Privet mite** (*Brevipalpus inornatus*). In the adult stage this mite is bright red, with a central darkening that forms two eyelike spots. The privet mite appears on the undersurface of azalea leaves, and may be very destructive.

The application of both sulfur and

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\* Section on pests by A. Earl Pritchard, Associate Professor of Entomology and Parasitology and Associate Entomologist in the Experiment Station, Berkeley.



lime sulfur has given satisfactory control, as has a light oil containing rotenone. A light oil emulsion in 1 to 2 per cent strength should be safe when applied on a day that is not too hot. Burning may occur on young leaves if the spray is too strong or if the light oil emulsion breaks down in hot weather.

**Cyclamen mite** (*Stenotarsonemus pallidus* (Banks)). This mite causes severe damage to azalea plants held a long time in the greenhouse. The cyclamen mite feeds on the new growth, where it aborts or deforms both leaves and flower buds. A greenhouse temperature range of 60° to 80° F seems to be highly favorable for this mite. Much less trouble has occurred under lath or in the open. The cyclamen mite has a fairly wide host range; this makes the mite hard to avoid completely.

In areas where the cyclamen mite is troublesome, growers may find that it can be avoided more easily if the azaleas are set out in the open garden rather than kept under glass. Frequent hosing of the foliage with water may help to keep such pests from getting started. Try to avoid placing a newly potted azalea plant with other azaleas until its freedom from cyclamen mites and similar pests is established.

By starting with healthy plants the amateur should not be troubled with the cyclamen mite. Most nurseries have facilities for adequate control, and since commercial growers sell only clean plants, those purchased from retail dealers should be healthy.

**Greenhouse thrips** (*Heliothrips haemorrhoidalis*). This dark-brown thrips has lighter color on the back and has light yellow legs. The greenhouse thrips is commonly found on the underside of rhododendron leaves; it may also be found on azalea foliage. A bronzy or silvered appearance of the leaves usually indicates its presence.

The gardener should observe the new

crop of leaves carefully and apply a DDT or other suitable spray before the thrips have had time to do extensive harm. Once the leaves are badly damaged, they cannot be restored to good health, but in time will drop and be replaced with the new crop of leaves.

If thrips are detected, spray with malathion, dieldrin, DDT, or lindane. Cover the underside of the leaves as completely as possible.

**Azalea leaf miner** (*Gracilaria azaleella*). This pest is often serious particularly under greenhouse conditions. A DDT spray gives excellent control of the caterpillars.

**Black vine weevil** (*Brachyrhinus sulcatus*). Both the grubs and the adult beetles of this fairly common pest cause damage to rhododendrons and azaleas.



*Brachyrhinus sulcatus* (black vine weevil) may girdle the roots and stem below the soil surface.



The insect is easily recognized by the kind of damage it does. Eggs dropped on the soil in summer hatch in about two weeks, and the grubs feed at first on the tender rootlets. By winter and early spring the grubs are large enough to attack the bark, and may entirely girdle the roots and stem below the soil surface. The grubs finally transform into adult weevils or beetles and emerge about May.

Most of their damage is to the leaves, where they eat pieces out of the leaf margin.

Spray with chlordane or dieldrin at the time the adults start to emerge in the spring (April or May in the San Francisco Bay region). It is important to cover the surface of the ground with the spray. It is not possible to kill the grubs that are developing on the roots.

## Rhododendrons and Azaleas are Selected According to Hardiness, Color, Form, and Height

### SELECTING RHODODENDRONS

More than 175 distinct varieties of rhododendrons can be purchased on the Pacific Coast at the present time, and new varieties are introduced each year. One rhododendron nursery alone is now growing as many as 250 varieties. This is a contrast to 1860, when such species as *Rhododendron ponticum* were being introduced into California.

**Hardiness.** One of the requirements in selecting rhododendrons is hardiness to heat and to cold. A few varieties tolerate full sun and are resistant to cold weather. Most varieties are reasonably tolerant of cold weather but need partial shade or at least protection from the hot afternoon sun. A third group thrives along the coast and can be grown in sheltered spots inland. Table 3 includes a column of hardiness for many old and new varieties.

**Color and form.** Also important in selection are color, compactness, size, habit of flowers, and season of bloom. Fanciers generally prefer rhododendron varieties of good color and large flower trusses. Pink Pearl has been a popular variety with large flowers, but of a color that tends to fade. Other varieties with similar large flower trusses are gradually forcing their way into popularity as they

become available. Among those of superior color and flower form are Alice, Betty Wormald, Gills Triumph, Loderi varieties, and Souvenir de Prof. Hugo de Vries.

**Height.** Tall rhododendrons, such as Pink Pearl and Alice, have been a problem in all but very large gardens. Easier to landscape are the low-growing or dwarf varieties which should have a place in the small home garden; they also can be planted to great advantage in large gardens in front of the tall varieties.

Rock-garden fanciers may also be interested in some of the dwarf rhododendrons listed by the nursery trade. Such species as *Rhododendron anthopogon*, *R. calostrotum*, *R. chryseum*, *R. impeditum*, *R. fastigiatum*, and *R. hirsutum* are being sold for rock-garden use. Dealers handling rock-garden plants may be consulted for additional names of dwarf species and varieties.

**Newer varieties.** In past years, California nurserymen have listed mostly the older rhododendron varieties, which are moderately priced. With the introduction of many fine varieties from abroad, the better new varieties can now be purchased from nurseries in California, Oregon, and Washington, although the price for newer introductions may be



**VARIETY KEYNOTES FORM, HEIGHT, AND  
COLOR IN THESE SPECIMENS OF  
RHODODENDRONS AND AZALEAS**

All of the flowers and plants shown in this manual were photographed either in Golden Gate Park, San Francisco, or at the California Spring Garden Show, in Oakland.

Florets of three varieties of *Rhododendron Loderi* show different form:  
Venus, King George, and Naomi.







Rhododendron Mrs. G. W. Leak is a very popular medium growing variety.

Rhododendron Elizabeth, a new 4-star English variety, was awarded highest certificate of merit at the 1955 California Spring Garden Show. It has red, bell-shaped florets.







Rhododendron Fragrantissimum is a popular white-flowered fragrant hybrid.

Bowbells is a rich pink rhododendron hybrid with bell-shaped florets, which is gaining in popularity.







Simon Mardner, a very popular Indian azalea in rose red with lilac overtone.  
Has a long blooming period.

Rhododendron Loderi var. Venus, a form with huge trusses of shell-pink flowers.  
This is a four-star English rhododendron.





**These are specimens of the brilliant coloring which azalea and rhododendron flowers can give to a garden. The dark green foliage of healthy plants seems to deepen the rich colors.**

Rhododendron augustinii, an upright, compact species with deep blue-mauve flowers about 2½ inches wide.



Rhododendron molle (Azalea mollis), a fine deciduous azalea with golden-yellow, funnelform flowers.







Azalea Sweetheart Supreme is a pink-flowered variety with rather loose habit of growth.

Azalea Snowdrift is a Macrantha variety with compact habit of growth.







Azalea White April is an Indica variety grown as a standard.





Azalea Alba Magnifica is an evergreen variety of *Rhododendron magnificum* (*Azalea ledifolia*) with fragrant white flowers.

*Rhododendron Blue Peter* is a 3-star hybrid unexcelled in its class and fine for planting in foreground.





high. In time these new varieties are certain to receive more attention from California gardeners; in fact, many of them already are being purchased and planted by fanciers in California. Gardeners will insist on getting what they want, even if they have to obtain the plants outside California and at a price well above the average for the common varieties.

Information about rhododendron varieties is found in catalogs issued by rhododendron specialists. The American Rhododendron Society publishes a yearbook and quarterly bulletin for its members; some libraries may have reference copies.

### SELECTING AZALEAS

In 1853, Warren and Son of Sacramento listed *Rhododendron indicum* var. *lateritium*, *R. molle*, *R. nudiflorum*, *R. pulchrum* var. *phoeniceum*, and *Azalea danielsiana* (now associated with *R. indicum*). From this beginning, the list of species and varieties now known as azaleas has grown until today the fancier

has no trouble in buying more than 50 distinct varieties and species.

Evergreen azaleas are usually preferred to deciduous, because their handsome foliage clothes the plant when the blossoms are gone. However, deciduous azaleas also have a place in the garden, where their bright-colored flowers often come after many of the evergreen azaleas are through blooming.

Deciduous azaleas really are dual-purpose: they are valued for their blossoms and also for their foliage, which may become highly colored before the leaves drop. Taller and more upright azaleas should be placed in the background, with lower, more compact forms in the foreground. When deciduous azaleas are included in the planting, combine them with evergreen plants to maintain green foliage in the garden during the dormant season of the deciduous plant.

In selecting azaleas, the important factors to consider are similar to those for rhododendrons: resistance to extremes of temperature and to wind; persistence of

Rhododendron Loderi var. Venus is a massive bush of color at full bloom.





foliage (evergreen or deciduous) and size of leaves; height of plant at maturity; flowering season and flowering habit (number of flowers on plant, color and size of flowers, and number of petals on flowers). Both single- and double-flowered varieties are available in most groups. Many of these characteristics are mentioned under the more important classes listed below.

Azaleas have been divided into groups according to the species used in making certain crosses. The common names of azaleas are taken from place of origin or distribution, such as Ghent from Ghent, Holland, Kurume from Kurume, Japan, Glenn Dale from Glenn Dale, Maryland, and Rutherfordiana from East Rutherford, New Jersey; from the person who originated the group, such as Sander, Gable, Koster, Dawson, and Wada; or if they are hybrids from certain species, such as Indica, Kaempferi, and Mollis.

Other important considerations involved in classifying azaleas are foliage (deciduous or evergreen) and season of bloom. The flowers may be single, semi-double, hose-in-hose, or they may be large or small. Certain general characteristics involved will be mentioned under the more important classes listed below.

**Ghent azaleas.** Several deciduous species of azaleas have been used to produce Ghent azaleas. These include *Rhododendron calendulaceum*, *R. flavum* (*luteum*), *R. nudiflorum*, and *R. viscosum*. The group name has been latinized as *Rhododendron gandavense*. This group of deciduous azaleas blooms later than the Indian azaleas. Their bright yellow-to-orange color and their foliage, which takes on fall coloring, make the Ghent an excellent selection in areas where winters are cold. Popular Ghent azaleas include Adrian, Altaclerense, Crimson King, Hollandia, Irene Koster, and many others.

**Indian azaleas.** These azaleas are derived from *Rhododendron simsii*, *R.*

*indicum*, *R. mucronatum* (*ledifolium*), *R. scabrum*, and *R. pulchrum*. As a rule these varieties are evergreen. They are somewhat tender to frost and often flower early. Within the general group certain varieties are sometimes grouped according to place of origin, as the Belgian Indicas. Similarly, the Indian azaleas grown in the southern states may be grouped separately. The amateur grower, however, will probably think mostly in terms of plants and varieties that have been forced for early bloom or of varieties known to do especially well in the garden as contrasted to pot culture. Almost all beginners will become acquainted with such Indian azaleas as Albert Elizabeth (Albert and Elizabeth), Fred Sanders, Paul Schame, Pride of Mobile, Simon Mardner, and Vervaeana. Table 9 lists some of the many kinds. The Belgian Indicas usually force well, while the straight Indicas do not. *R. simsii* hybrids make up most of the Belgian Indicas. Some growers believe they should be grafted for vigor.

**Kaempferi azaleas.** The Kaempferi azaleas in the trade have been supplied by *Rhododendron obtusum kaempferi* and certain crosses with *R. indicum*. The varieties are usually less popular than the Indicas, yet the beginner may find some worth growing, such as Alice (orange), Carmen (rose red), Garden Beauty (soft pink), Juliana (deep pink), Kathleen (rosy red), Louise (soft pink), and Nora (orange red). Their color range is wide.

**Kurume azaleas.** This popular group of evergreen azaleas was derived from *Rhododendron obtusum* var. *amoenum*, and in the trade is closely related to the Kaempferi and Sander hybrids. The flowers of many Kurumes run smaller than those of the Indian azaleas. The plants are compact and hardy. In most cases they are dwarf, this characteristic making them suitable for massing or grouping. The leaves are usually small. Thousands of Kurume azaleas were



brought to California in 1915 for the Panama Pacific Exposition in San Francisco. Originally many of the varieties had Japanese names, some of which have now been changed to English names, as Azuma Kagami (Pink Pearl), Howo (Apple Blossom), Kirin (Daybreak), Kurenoyuki (Snowflake), and Otome (Maidens Blush). Other Kurume varieties are sometimes found in lists, as indicated in table 10. Christmas Cheer, Coral Bells, Hinodegiri, and Snowbird are popular Kurume varieties. While the plants and flowers are less spectacular individually than the Indicas and several other kinds, they do have an important place in shady gardens where mass planting is needed to give color. They will also stand more cold than the Indicas and other tender kinds.

**Mollis azaleas.** Early breeders used *Rhododendron molle*, *R. japonicum*, and *R. kosterianum* to develop the varieties in this group. Some fanciers refer to the Molle-Ghent Alliance, because they are all deciduous and have bright colors. Some special hybrids may be segregated under a separate name, such as the names developed by M. Koster and Sons of Boskoop, Netherlands. P. M. Koster also worked with the Kaempferi azaleas. The Mixtum azaleas may be listed separately as a double Mollis. Beginners will rarely be interested in making such fine distinctions, but will be interested in varieties like Adelaid (orange), Afterglow (pink), Anthony Koster (rosy red), Elizabeth (claret red), Kosters Orange (orange), Peach Blossom (delicate peach), Pink Beauty (pink), and Prince Albert (salmon rose). It will be noted the colors run to orange, pink, rosy red, rich yellow, salmon rose, or red. Hardiness and the later flowering season for these varieties are important considerations.

**Sander hybrids.** Hybrids in this group come from *Rhododendron obtusum* and certain Indian azaleas of *R.*

*simisi* derivation. Charles Sander, working at the Arnold Arboretum about 1886, did the pioneer work. His name is applied to the hybrid group. Almost all fanciers are familiar with Hexe (crimson red), but there are many others, such as Hebe (white striped), Rose Queen (deep rose), Venus (cerise), and Vivid (scarlet). The Sander varieties are often known as Baby Indicas because of their suitability for small-pot culture and forcing.

**Exbury hybrids.** The hybrids in this group were developed by Lionel de Rothschild of Exbury, England, who started with the Knaphill strain of Anthony Waterer of Woking, Surrey, England. After undergoing several years of hybridizing and selection this fine strain of hardy deciduous azaleas became available. The Exbury hybrids bloom about two weeks later than the Mollis varieties, and the flowers (up to 4 inches in diameter) are carried in large trusses. The colors range from white to pastels, fiery reds, oranges, and deep yellows. Some of the varieties in this group are being sold on the Pacific Coast, as listed in table 11.

**Gable hybrids.** These hybrids are named after Joseph Gable of Stewartstown, Pennsylvania. They bloom through April and May, and of course are appreciated where a hardy deciduous azalea must be selected to stand the cold. Varieties in this group include Elizabeth Gable (late rose pink), Louise Gable (double salmon pink), Rose Greenly (white hose-in-hose), and Purple Splendor (purple-red fringed hose-in-hose).

**Glenn Dale hybrids.** B. Y. Morrison, working at Glenn Dale, Maryland, developed these deciduous hybrids which bloom mostly from April through May. Some bloom profusely and under California conditions the blooming period can be extended over many months by making a wide choice in varieties. In this group varieties include Carmel, Copperman, Crinoline, Fantasy, Fashion, Morn-



ing Star, Pied Piper, Serenade, Sterling, and several others occasionally listed on the West Coast.

**Rutherfordiana hybrids.** The hybrids in this group were developed by L. C. Bobbink, of Bobbink and Atkins, East Rutherford, New Jersey, who did some of his work about 1925. Some of the patented azaleas in this group are said to have been developed by crossing *Rhododendron indicum* and the Omarski variety of *R. pulchrum*; hence the similarity to some of the Indicas. Pink Pearl (Azuma Kagami), one of the Kurumes, is reported to have been used in some of the crosses. The plants are evergreen, and the flowers have pure colors that range from white to deep carmine. They include singles, semi-doubles, and doubles. In California the blooming season starts about February and extends into April. Like some of the Indicas, the

Rutherfordianas need a temperature of about 15° F to escape winter damage. When grown outdoors in a warm climate they thrive in a shady or semishady location.

**Miscellaneous hybrids.** The Pericat, Vuyk, and Wada hybrids are valued for their spring bloom, coming mostly in April and May (table 8). In California the Dawson hybrids flower in March and April. The Chugai hybrids, derived from *Rhododendron indicum*, bloom from April on. Their odd names, such as Row-Gettsu, Gun-Rei, and Gun Bi, may be found occasionally in azalea lists. The flowering season extends into May and June. Albicans has also given rise to a few named varieties, such as Blush Beauty and Sheba, which have *R. molle* and *R. occidentale* parentage. Here again, hardiness is a prime factor to consider when selecting this group.

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**Table 1—SOME COMMON NAMES APPLIED TO  
RHODODENDRON SPECIES**

Common name of species	<i>Rhododendron</i> species
Amberbloom.....	<i>R. flavidum</i>
Apricotbell.....	<i>R. concatenans</i>
Ashrobe.....	<i>R. tephropeplum</i>
Augustine.....	<i>R. augustini</i>
Bigleaf.....	<i>R. calophytum</i>
Bloodbloom.....	<i>R. didymum</i>
Bluet.....	<i>R. intricatum</i>
Bodinier.....	<i>R. bodinieri</i>
Burmaflame.....	<i>R. sperabile</i>
Cinnabar.....	<i>R. cinnabarinum</i>
Cloudland.....	<i>R. impeditum</i>
Corrietre.....	<i>R. fictolactum</i>
Falconer.....	<i>R. falconeri</i>
Fleeceleaf.....	<i>R. chaetomallum</i>
Fortunes.....	<i>R. fortunei</i>
Fringed.....	<i>R. ciliatum</i>
Globe.....	<i>R. orbiculare</i>
Goldmat.....	<i>R. chrysanthum</i>
Grierson.....	<i>R. griersonianum</i>
Griffith.....	<i>R. griffithianum</i>
Honeybell.....	<i>R. campylocarpum</i>
Houlston.....	<i>R. houlstoni</i>
Huntingcoat.....	<i>R. venator</i>
Madden.....	<i>R. maddenii</i>
Mandarin.....	<i>R. discolor</i>
Mayflower.....	<i>R. racemosum</i>
Moraine.....	<i>R. scintillans</i>
Moupin.....	<i>R. moupinense</i>
Oleander.....	<i>R. neriiflorum</i>
Oread.....	<i>R. oreotrephes</i>
Pemako.....	<i>R. pemakoense</i>
Royalalp.....	<i>R. russatum</i>
Royalblood.....	<i>R. haematodes</i>
Saffronleaf.....	<i>R. eximium</i>
Sweetshell.....	<i>R. decorum</i>
Thomson.....	<i>R. thomsoni</i>
Tibetblood.....	<i>R. sanguineum</i>
Tree.....	<i>R. arboreum</i>
Trumpetmantle.....	<i>R. repens</i>
Twincolor.....	<i>R. dichroanthum</i>
Whiteshield.....	<i>R. leucaspis</i>
Wight.....	<i>R. wightii</i>
Williams.....	<i>R. williamsianum</i>
Winter.....	<i>R. praecox</i> (hybrid, <i>ciliatum</i> × <i>dauricum</i> )
Woodlandglory.....	<i>R. euchaetes</i>
Yunnan.....	<i>R. yunnanense</i>



**Table 2—SOME RHODODENDRON SPECIES OF POPULAR INTEREST AND USED IN BREEDING**

<i>Rhododendron</i> species	Common name	Used as parent for	Country of origin	Height, in feet	Season	Flowers
<i>R. arboreum</i>	Tree rhododendron		Himalayas	40	Mar.-May	red, pink, or white; bell-shaped; 1½ inches wide
<i>R. augustini</i>	Augustine rhododendron	Augfast, Blue Bird, Blue Diamond, Blue Tit, Russautini	SW China	6	May	deep blue; dark eye; 2½ inches wide
<i>R. bodinieri</i>	Bodinier rhododendron		Yunnan	small shrub		rose spotted purple; 1¼ inches long
<i>R. calophytum</i>	Bigleaf rhododendron		West China	small tree	Apr.	white with crimson throat marking; bell-shaped
<i>R. campylocarpum</i>	Honeybell rhododendron	Barbara, Damaris, Gladys, Lady Bessborough var. Roberte, Margaret Dunn, Moonstone	Himalayas	8	May-June	yellow; 1¼ inches wide
<i>R. chaeiomallum</i>	Fleeceleaf rhododendron		China	4-5		deep crimson
<i>R. chrysanthum</i>	Goldmat rhododendron		Siberia to Japan	1-3	May-June	pale yellow; bell-shaped; 1 inch wide
<i>R. ciliatum</i>	Fringed rhododendron	Cilpinense; Fragrantissimum	Himalayas	6	Apr.	white or reddish purple; bell-shaped; to 1½ inches wide
<i>R. cinnabarinum</i>	Cinnabar rhododendron	Lady Chamberlain, Lady Rosebery, Royal Flush	SW China	6	June	port-wine red; tubular and pendant
<i>R. concatenans</i>	Apricotbell rhododendron		China	6	June	apricot; tubular



<i>R. decorum</i>	Sweetshell rhododendron	White Swan	China	18	May-June	white or pink; bell-shaped; to 2 inches wide
<i>R. dichroanthum</i>	Twincolor rhododendron	Fabia, King Cup	Yunnan	6-7	June	yellowish rose to orange; 1 inch wide
<i>R. didymum</i>	Bloodbloom rhododendron	Arthur Osborn, Red Cap	SE Tibet	1-3	June	deep crimson; bell-shaped
<i>R. discolor</i>	Mandarin rhododendron	Azor, King of Shrubs, Lady Bessborough var. Roberte, Margaret Dunn	China	15	June	white or pale pink; bell-shaped; to 3½ inches.
<i>R. eriogynum</i>		Chanticleer, Red Cap, Tally Ho				
<i>R. euchaëtes</i>	Woodlandglory rhododendron	Little Bert	Yunnan-Burma border	8-10 plus	May	crimson scarlet; 1½ inches long
<i>R. eximium</i>	Saffronleaf rhododendron		Himalayas	30	late Apr.	pale pink; not spotted; 2 inches wide
<i>R. fictolacteum</i>	Corriectree rhododendron		China	20	Apr.	white or cream with crimson blotch; bell-shaped; 2 inches
<i>R. flavidum</i>	Amberbloom rhododendron	Yellow Hammer	West China	3		yellow; 1 inch wide
<i>R. fortunei</i>	Fortunes rhododendron	China, Goldfort, Gladys, Naomi	China	12	May-June	lilac or pink; bell-shaped; to 3 inches
<i>R. griersonianum</i>	Grierson rhododendron	Azor, Elizabeth, Glowing Embers, Joek, May Day, Tally Ho, Vanessa A Form, Vulcan	China	6	May	rose with darker spots; 2½ inches long
<i>R. griffithianum</i>	Griffith rhododendron	Alice, Gills Crinson, Loderi, Loders White, Pink Pearl	Himalayas	8	May	white; bell-shaped; 3 inches wide

Continued next page



**Table 2—SOME RHODODENDRON SPECIES OF POPULAR INTEREST AND USED IN BREEDING (continued)**

<i>Rhododendron</i> species	Common name	Used as parent for	Country of origin	Height, in feet	Season	Flowers
<i>R. haematodes</i>	Royalblood rhododendron	Humming Bird, May Day	SW China	3	Apr.	scarlet or crimson; bell-shaped; 2 inches long
<i>R. houlstoni</i>	Houlston rhododendron	Arthur J. Ivens	China	12	May-June	pink; 3 inches wide
<i>R. impeditum</i>	Cloudland rhododendron	Blue Tit	Yunnan	2	late Apr. to June	purple; funnel-shaped; 2 inches long
<i>R. intricatum</i>	Bluet rhododendron	Blue Bird	China	1½	June	violet purple; funnel-shaped; 2 inches wide
<i>R. leucapsis</i>	Whiteshield rhododendron	Bric-a-Brac	Tibet	1-2	early spring	white; 2 inches wide
<i>R. maddenii</i>	Madden rhododendron	Royal Flush	Himalayas	6-9		white; tubular; 3½ inches wide
<i>R. moupinense</i>	Moupin rhododendron	Bric-a-Brac, Cilpinense, Bo-Peep, Tessa	East Tibet	2½	Jan.	white; funnel-shaped; 1½ inches long
<i>R. neriiflorum</i>	Oleander rhododendron	Adrastia, David, Ethelred, Little Ben	Burma	3-9		plum color, red inside; funnel-shaped; ½ inch long
<i>R. orbiculare</i>	Globe rhododendron	Temple Belle	West China	6		rose; bell shaped; 2½ inches wide
<i>R. oreotrephes</i>	Oread rhododendron		China	8	May	rose lavender; funnel-shaped; 1½ inches long
<i>R. pemakoense</i>	Pemako rhododendron		Tibet	1 ground cover	Apr.	mauve; 2 inches wide
<i>R. praecox</i> (hybrid, <i>ciliatum</i> × <i>dauricum</i> )	Winter rhododendron	Tessa			Mar.-Apr.	rose purple; ½ inch across



<i>R. racemosum</i>	Mayflower rhododendron		China	to 6	Apr.-May	pink; bell-shaped; ¾ inch wide
<i>R. repens</i>	Trumpetmantle rhododendron	Elizabeth, Little Ben, Little Bert, Little Joe, Treasure	West China	½-1		crimson; trumpet-shaped; 1½ inches long
<i>R. russatum</i>	Royalalp rhododendron	Russautini	Yunnan	3-4	Apr.	bright blue to deep purple; ¾ inch long
<i>R. sanguineum</i>	Tibetblood rhododendron		West Yunnan	3	May	crimson to black-red; bell-shaped; 1½ inches long
<i>R. scintillans</i>	Moraine rhododendron		Yunnan	3-6	Apr.	lavender to scarlet; funnel-form; 1 inch wide
<i>R. sperabile</i>	Burmaflame rhododendron		NE Burma	3-6	Apr.	scarlet; bell-shaped; 1½ inches long
<i>R. sulfureum</i>		Yellow Hammer	Yunnan	2-4		bright yellow; ¾ inch wide
<i>R. tephropeplum</i>	Ashrobe rhododendron		SE Tibet	3	Apr.	magenta rose; funnel-form; 1 inch long
<i>R. thomsoni</i>	Thomson rhododendron	Chanticleer	Himalayas	12	early spring	blood red; bell-shaped; to 3 inches wide
<i>R. venator</i>	Huntingcoat rhododendron		China	8	May	bright red; tubular
<i>R. wighti</i>	Wight rhododendron		Himalayas	10-15	late Apr.	pale yellow blotched crimson; 1½ to 2 inches long
<i>R. williamsianum</i>	Williams rhododendron	Adrastia, Arthur J. Ivens, Bowbells, Jock, Humming Bird, Moonstone, Temple Belle, Treasure	West China	3		pale rose, 3 to 5 together
<i>R. yunnanensis</i>	Yunnan rhododendron		China	6	May	white or pinkish spotted red; funnel-form; 2 inches wide



Table 3—SELECTED LIST OF BOTH OLD AND NEW RHODODENDRON VARIETIES \*

Variety	Flowers	Season	Habit of growth	Hardiness in degrees
A. Bedford**	large; lavender blue	May	tall	to 10 below
Alice**	conical trusses; deep pink fading to rose	mid-May	tall	to 10 below
Arthur J. Ivens***	Persian rose; bell-shaped	mid-Apr.	dwarf	to 10 below
Arthur Osborn**	dark scarlet; tubular	June	dwarf, compact	to 10 below
Augfast***	bluer than Blue Tit	early Apr.	dwarf to 5 feet	light shade
Azor***	salmon pink; trumpet-shaped	June	medium height	to 5 below
Barbara	creamy pink; Loderi hybrid	May	medium height	
Betty Wormald***	pink with darker markings on upper petals	mid-May	medium height	to 5 below
Blue Bird	blue like Blue Diamond and Blue Tit	May	dwarf	
Blue Diamond****	lilac blue	mid-Apr.	dwarf to 3 feet	hardy with partial shade
Blue Peter***	lavender blue	May	medium to 5 feet	to 10 below
Blue Tit*****	light blue	early Apr.	dwarf to about 3 feet	to 5 below
Bonfire**	bright red; large trusses	mid-May	medium height	to 10 below
Bo-Peep***	pale yellow	late Mar.	low, compact	
Bric-a-Brac	white with chocolate anthers	mid-Mar.	dwarf	to 5 below
Britannia****	bright red	early June	medium height	to 5 below
C. B. Van Nes**	scarlet; bell-shaped	mid-Apr.	medium height	to 5 above
China***	pale ochre, red throat markings	May	upright	partial shade
Cilpinense***	pinkish white	early Apr.	low to 3 feet	to 5 above
Corona***	coral pink	Apr.-May	dwarf, spreading	to 5 below
Countess of Derby**	rose pink (cross between Pink Pearl and Cynthia)	end of May	tall	to 5 below
Cynthia**	rose red	May	medium height	to 5 below
David**	intense red	mid-May	medium height	to 5 below
Earl of Athlone***	blood red	late Apr.	medium height	to 5 above
Elizabeth****	deep red; free flowering	late Apr.	low, to 3 feet	to 5 below
Fabia var. Exbury***	apricot yellow flushed salmon	early May	low, to 4 feet	to 5 above
Fabia var. Roman Pottery***	pale orange and coppery red lobes	early May	low, to 4 feet	to 5 above
Fabia var. Tangerine***	vermillion shaded geranium lake	early May	low, to 4 feet	to 5 above
Fabia var. Towercourt***	pale apricot, yellow margined salmon pink	early May	low, to 4 feet	to 5 above
Faggetters Favorite***	shell pink, tall trusses	early May	low, to 4 feet	to 5 above
Fastuosum plenum	double mauve	late May	tall	to 5 below
			medium height	zero



FrAGRANTISSIMUM.....	white; fragrant flowers	Apr.-May	tall	fairly hardy
GILLS CRIMSON****	dark blood red	early	medium height	
GLOWING EMBERS.....	geranium scarlet; tight trusses	early June	medium height	
GOLDFORT***	lemon yellow suffused pink	May	medium height	hardy
JAN DEKENS.....	pink; fringed edge	mid-May	to 6 feet	to 5 below
JEAN MARY MONTAGU.....	bright crimson	May	medium height	hardy
J. H. VAN NES.....	soft red	late May	low	
JOCK.....	dark pink	late May	medium height	
KINGCUP.....	Indian yellow; loose trusses	late May	medium height; robust	to 5 below
KING OF SHRUBS.....	salmon pink suffused golden yellow inside	late May		
LADY BESSBOROUGH				
var. ROBERTE**	pink-shaded yellow	mid-May	medium height	to 5 below
LADY BLYTH***	strawberry red fading to pink	May	medium height	to 5 below
LADY CHAMBERLAIN				
var. CHELSEA.....	orange pink			
var. GLEAM.....	orange yellow tipped crimson			
LADY CLEMENTINA MITFORD.....	peach pink, deeper margin	late May	medium height	hardy
LADY ROSEBERY****	soft rose pink, flushed carmine	May	medium height	to 5 above
LANGLEY PARK.....	red	May	medium height	hardy
LITTLE BEN.....	red; bell-shaped	early Apr.	dwarf, to 18 inches	to 5 below
LITTLE JOE.....	deep red	late Apr.	dwarf	to 5 below
LODERI GROUP****				
var. KING GEORGE.....	ivory white; large trusses			
var. SIR JOSEPH HOOKER.....	deep shell pink			
var. VENUS.....	shell pink; huge trusses			
LODERS WHITE****	one of best whites for garden			
MARGARET DUNN**	apricot flushed pink; funnel-shaped	early May	medium height	to 5 below
var. GOLDEN BELLE.....	large, deeper yellow	late May	medium height	to 5 below
var. TALISMAN.....	resembles Talisman rose			
MARS****	dark red			
MAY DAY****	cerise scarlet; free flowering	late May	medium to 6 feet	to 10 below
MME. DEBRUIN.....	cerise red	early May	low, to 4 feet	to 5 below
MOONSTONE**	pink to creamy yellow; cup-shaped	May	medium	hardy
MOTHER OF PEARL***	pale blush to white; sport of Pink Pearl	mid-Apr.	low to 2½ feet	to 5 below
MRS. BETTY ROBERTSON.....	yellow with carmine markings inside; large, cup-shaped florets	May	tall, to 6 feet	to 5 below
		mid-May	medium height	zero

\* Star rating from England (\*\*\*\* highest rating; some varieties not yet fully rated). California rating may differ somewhat. Hardiness not fully determined on some varieties.



Table 3—SELECTED LIST OF BOTH OLD AND NEW RHODODENDRON VARIETIES\* (continued)

Variety	Flowers	Season	Habit of growth	Hardiness in degrees
Mrs. C. B. Van Nes.....	deep pink; compact	early May	medium height	to 5 above
Mrs. Charles Pearson**.....	mauve, spotted sienna; large	May	tall	zero
Mrs. Furnival****.....	clear pink; tight trusses	May	medium height	to 10 below
Mrs. G. W. Leak*** (Cottage Garden Pride)	deep pink with conspicuous markings on upper petals	May	medium height	to 10 below
Naomi group****	compact, rounded trusses; large florets	May	medium height	to 15 below; stands some wind
var. Exbury.....	rose pink			
var. Glow.....	bright pink			
var. Pink Beauty.....	deep pink			
Pink Pearl**.....	rose pink; popular	May	tall, to 6 feet	to 5 below
Purple Splendour****	fine purple with darker mark on upper petal	late May	medium height	to 10 below
Racil.....	apple-blossom pink	early Apr.	dwarf	zero
Red Cap.....	blood red	mid-June	dwarf	to 5 above
Royal Flush****	pink and orange	mid-May	medium height	to 5 above
Russautini.....	lavender blue	late Apr.	low	to 5 below
Sappho**.....	white with conspicuous marking in throat	late May	tall	to 10 below
Souvenir W. C. Slocock***	pink, opening primrose yellow	early May	low, to 3½ feet	to 5 below
Tally Ho****	bright scarlet	June	medium height	to 15 above; needs shelter
Tessa.....	rosy purple to rose pink; like Alice	Mar.	fine dwarf; compact	stands cold
Unique****	deep cream flushed apricot when open; tight, rounded trusses	late Apr.	to 5 feet, compact	to 5 below
Vanessa group***	funnel-shaped	May	medium height	hardy along coast
A Form.....	salmon pink with darker throat			
Pastel.....	cream, flushed shell pink, with darker scarlet throat shading			
Vulcan**.....	bright red	mid-May	medium height	to 10 below
Yellow Hammer**.....	yellow; tubular-shaped	early Apr.	to 6 feet	needs partial shade

\* Star rating from England (\*\*\*\* highest rating; some varieties not yet fully rated). California rating may differ somewhat. Hardiness not fully determined on some varieties.



**Table 4—SELECTED LIST OF DWARF RHODODENDRONS**

Variety	Flowers and habit	Season
Adrastia.....	deep pink; bell-shaped	Apr.
Arthur J. Ivens.....	Perisan rose; 3 to 4 feet	mid-Apr.
Blue Bird.....	clear blue	May
Blue Diamond.....	fine blue; compact to 3 feet	mid-Apr.
Blue Tit.....	light blue; to 3 feet	early Apr.
Bo-Peep.....	cream with yellow flare; compact	late Mar.
Bowbells.....	pink; to 4 feet	May
Bric-a-Brac (new)....	white with chocolate anthers	mid-Mar.
Cilpinense.....	pinkish white; to 3 feet	early Apr.
Corona.....	coral pink; low, spreading	Apr.—May
Elizabeth.....	deep red; spreading to 3 feet	late Apr.
Jock.....	dark pink, spreading; one of the best	late May
Little Ben.....	red; bell-shaped; to 18 inches	early Apr.
Little Joe.....	deep red; prostrate	May
May Day.....	cerise scarlet; to 4 feet	early May
Moonstone.....	pink to creamy yellow; cupped; to 2½ feet	mid-Apr.
Racil.....	apple-blossom pink; shrubby to 3 feet	early Apr.
Red Cap.....	blood red; low, for rock garden	mid-June
Russautini.....	lavender blue; low and twiggy	late Apr.
Tessa.....	rosy purple and open rose pink; compact; fine dwarf	early Mar.



**Table 5—SOME HINTS ON COLOR SELECTIONS**

Color prevailing	Tall growing (6 feet or more)	Medium height (4-6 feet)	Low growing (3-4 feet or less)
White	Albatross Beauty of Littleworth Loderi var. King George Sappho White Swan	Loders White	Bric-a-Brac Cilpinense
Yellow, cream, or apricot	Yellow Hammer	Goldfort King cup Mrs. Betty Robertson Unique	Bo-Peep Souvenir W. C. Slocock Fabia group
Blue, lavender, or purple	A. Bedford	Blue Peter Purple Spendour	Augfast Blue Bird Blue Diamond Blue Tit Russautini
Pink	Alice Countess of Derby Faggetters Favorite Loderi var. Venus Mother of Pearl Pink Pearl	Azor Betty Wormald Lady Bessborough var. Roberte Lady Rosebery Mrs. C. B. Van Nes Mrs. Furnival Mrs. G. W. Leak Naomi group Royal Flush Vanessa group	Corona Racil Tessa
Red, rose red, or crimson	Cynthia Jean Mary Montagu	Bonfire Britannia C. B. Van Nes David Earl of Athlone Gills Crimson Lady Bligh Mars Tally Ho Vulcan	Arthur Osborn Elizabeth Little Ben Little Joe May Day Red Cap



**Table 6—SOME AZALEA COMMON NAMES AND RHODODENDRON SPECIES INVOLVED**

Common name	<i>Rhododendron</i> species
Albicans.....	<i>R. molle</i> × <i>R. occidentale</i>
Arnold.....	<i>R. arnoldianum</i> ( <i>A. obtusa amoena</i> × <i>A. obtusa kaempferi</i> )
Autumnleaf.....	<i>R. semibarbatum</i>
Cascade.....	<i>R. albiflorum</i>
Chinese.....	<i>R. molle</i>
Coast.....	<i>R. atlanticum</i>
Flame.....	<i>R. calendulaceum</i>
Fringed Indica.....	<i>R. indicum laciniatum</i>
Ghent.....	<i>R. gandavense</i> (group of hybrids between <i>R. flavum</i> and hybrid Mortieri)
Hiryu.....	<i>R. obtusum</i>
Indian.....	<i>R. simsii</i> and hybrids
Indica.....	<i>R. indicum</i>
Japanese.....	<i>R. japonicum</i>
Koster.....	<i>R. kosterianum</i> (hybrid between <i>R. japonicum</i> and <i>R. molle</i> )
Kurume.....	<i>R. obtusum japonicum</i>
Lovely.....	<i>R. pulchrum</i>
Luchu.....	<i>R. scabrum</i> ( <i>sublanceolatum</i> )
Mortier.....	<i>R. calendulaceum</i> × <i>R. nudiflorum</i>
Oconee.....	<i>R. speciosum</i>
Orange flame.....	<i>R. calendulaceum aurantium</i>
Piedmont.....	<i>R. canescens</i>
Pinkshell.....	<i>R. vaseyi</i>
Pinxterbloom.....	<i>R. nudiflorum</i>
Plumleaf.....	<i>R. prunifolium</i>
Pontiac.....	<i>R. flavum</i> ( <i>luteum</i> )
Rose.....	<i>R. reticulatum</i>
Roseshell.....	<i>R. roseum</i>
Royal.....	<i>R. schlippenbachii</i>
Sander.....	<i>R. sanderi</i> ( <i>R. obtusum</i> × <i>R. simsii</i> )
Smooth.....	<i>R. canescens glabrum</i>
Snow.....	<i>R. mucronatum</i> ( <i>R. ledifolium</i> )
Sunbeam.....	<i>R. altaclerense</i> ( <i>R. catawbiense</i> × <i>R. ponticum</i> × <i>R. arboreum</i> ) (1826)
Swamp.....	<i>R. viscosum</i>
Sweet.....	<i>R. arborescens</i>
Torch.....	<i>R. obtusum kaempferi</i>
Western.....	<i>R. occidentale</i>
White.....	<i>R. obtusum album</i>
White Piedmont.....	<i>R. canescens candidum</i>
Yodogawa.....	<i>R. yedoense</i>



**Table 7—SOME POPULAR SPECIES OF RHODODENDRON KNOWN AS AZALEAS**

<i>Rhododendron</i> species	Common name	Native habitat	Height, in feet	Color and size of flower	Season	Deciduous or evergreen
<i>R. arborescens</i> .....	Sweet azalea	Pennsylvania, Georgia, and Alabama	10	white or pinkish; 2 inches long	July	deciduous
<i>R. atlanticum</i> .....	Coast azalea	Delaware to South Carolina	3	white or pinkish; 1 inch across	May-June	deciduous
<i>R. calendulaceum</i> ..	Flame azalea	Pennsylvania to Georgia and Kentucky	10	orange yellow; 2 inches across	May	deciduous
<i>R. canescens</i> .....	Piedmont azalea	North Carolina to Florida and Texas	15	pink or white; 1½ inches across	May	deciduous
<i>R. flavum (luteum)</i>	Pontiac azalea	Caucasus	12	yellow; 2 inches across	May	deciduous
<i>R. indicum</i> .....	Indica azalea	Japan	6	red or pink; 3 inches across	June-July	mostly evergreen
<i>R. japonicum</i> .....	Japanese azalea	Japan	6	orange red or scarlet; 2½ inches across	Apr.-June	deciduous
<i>R. molle</i>	Chinese azalea	China	5	golden yellow; 2 inches across	May	deciduous
<i>R. mucronatum</i> .....	Snow azalea	China	6	white; 2 inches across	May	deciduous
<i>R. nudiflorum</i> .....	Pinxterbloom azalea	Maine to Florida and Texas	6	pink to white; 1½ inches across	Apr.-May	deciduous
<i>R. obtusum</i> .....	Hiryu azalea	Japan	3	red, etc.; 1½ inches across	Apr.-May	evergreen or deciduous
<i>R. occidentale</i> .....	Western azalea	Oregon and Cali- formia	10	white or pink; 2 inches across	June-July	deciduous
<i>R. pulchrum</i> .....	Lovely azalea	China	6	rose purple; 2½ inches across	May	mostly evergreen
<i>R. reticulatum</i> .....	Rose azalea	Japan	25	rose purple with brown spots; 2 inches across	Apr.-May	deciduous
<i>R. schlippenbachii</i> ..	Royal azalea	Korea, Japan, and Manchuria	15	pink; 3 inches across	May	deciduous
<i>R. simsii</i> .....	Indian azalea	China, Formosa	10	rose to red; 2 inches across	May-June	semi-evergreen
<i>R. speciosum</i> .....	Oconee azalea	South Carolina to Georgia	6	red with yellow spot; 2 inches across	May	deciduous
<i>R. vaseyi</i> .....	Pinkshell azalea	North Carolina	15	rose spotted brown; 1½ inches across	Apr.-May	deciduous
<i>R. viscosum</i> .....	Swamp azalea	Maine to South Carolina	10	white or pink; 2 inches long	July	deciduous
<i>R. yedoense</i> .....	Yodogawa azalea	Korea, Japan	6	rose-like; 2 inches across	May	semi-evergreen



**Table 8—SOME AZALEA HYBRID GROUPS OF POPULAR INTEREST**

Hybrid or group	Season of bloom	Foliage
Albicans.....	May	deciduous
Altaclerense.....	May	deciduous
Arnold hybrids.....	May-June	evergreen
Belgian hybrids.....	Nov.-May	evergreen
Chugai hybrids.....	May	evergreen
Dawson hybrids.....	Mar.-Apr.	
Exbury hybrids.....	Apr.- May	deciduous
Gable hybrids.....	Apr.- May	evergreen
Ghent hybrids.....	Apr.-June	deciduous
Glenn Dale hybrids.....	Apr.-May	deciduous
Indian hybrids.....	Dec.-Mar.	evergreen
Kaempferi hybrids.....	Apr.-May	evergreen
Koster hybrids.....	May-June	deciduous
Kurume hybrids.....	Feb.-Apr.	evergreen
Molle-Ghent Alliance.....	Apr.-June	evergreen
Pericat hybrids.....	Feb.-May	
Rutherfordiana.....	Mar.-Apr.	evergreen
Sander hybrids (Baby Indicas).....	Feb.-Apr.	evergreen
Vuyk hybrids.....	Apr.-May	
Wada hybrids.....	Apr.-May	evergreen



**Table 9—SOME POPULAR INDIAN AZALEAS**

Indian azaleas (Rhododendron simsii hybrids)	Season of bloom	Flower color and size	Remarks
Adryan Stuyart (AdrionSteyart).....	spring	double; purple	fairly new; bushy; good foliage
Albert Elizabeth (Albert and Elizabeth)....	midseason	double; white with pink edging	popular; fine, glossy foliage
Avenir.....	Thanksgiving to spring; early	coral to salmon pink; double; large	compact growth
Blushing Bride.....	spring	delicate pink; double	heavy bloom
Chimes.....	Christmas on; early forcing	long red; trumpet-shaped	heavy bloom
Christmas Star.....	Dec.-Mar.	semidouble; red	sturdy; free blooming
Eclaireur.....	midseason	deep red with maroon throat; double	long flowering season; new
Eric Schame (Erie).....	Oct.-spring	variegated form of Paul Schame	heavy bloom
Ernest Eeckhaute (van Eckhout).....	late	deep red; large double	heavy bloom
Ernest Thiers.....	late	double; red	floriferous; symmetrical; vigorous growth
Jean Haerens (John Haerens, Jean Herrons)	spring; long season	double; red	
Julius Roehrs.....	late	double; red	heavy bloom
Loelia Alba.....	Nov.-spring	double; white	good foliage; easy to force
Memoire Sanders.....	early	heavy double; cerise	very full bloom
Miss Cottage Gardens.....	good at Christ- mas	deep red	compact, bushy growth
Mme. Alfred Sanders.....	Nov.-May	ruby red; double	popular; floriferous
Mme. Chas. Vuylsteke.....	midseason	large; double; dark red	heavy bloom
Mme. Joseph Vervane Variegated.....		large; coral pink and white	fine foliage
Mme. Mesdag.....		deep salmon; semidouble	
Mme. Petrick.....	early	white; semidouble	
Mme. Van der Cruyssen.....	midseason	large semidouble; cherry red	



Mme. Van Gaele.....	late	brick red ; large ; double	heavy bloom
Morgan Buckley.....	spring	rose pink ; double	heavy bloom
Niobe.....	late	large white ; double	heavy bloom
Orchid Flora.....	spring	large orchid pink	fine, strong grower
Paul Schame.....	Sept.-Apr.	double ; salmon	one of the very best
Perle de Noisey.....	early	double ; pink, white, and red	heavy bloom
Perle de Saffelarea.....	spring	double ; white	
Perle de Sweynaarde.....	early	large ; double ; white	heavy bloom
Pheasant.....	early spring	light purple ; single	
Professor Walters (Wolters).....	Jan.-May	large single ; red with white margins	hardy, vigorous
	long season		
Prosper Van Daele.....	midseason	large double ; red	
Roosevelt.....	spring	dark salmon pink	heavy bloom
Simon Mardner.....	long blooming	rose red with lilac overtone	large, heavy bloom
	season		
Souvenir de Loo Christi.....	midseason	watermelon rose ; double	large, heavy bloom
Sweet Sixteen.....	early Sept.	shell pink ; double	resembles Mme. Petrick, except for color
Temperance.....	spring	double ; lavender	bushy plant
Theodore Findiessen.....	early	deep salmon ; double	
Theodore Pieno.....	early	large double ; pink and white	
Triomphe (Triumph, Triomphe).....	spring	large ; double ; red	
Vanessa.....		large ; single ; purple	hardy, rapid grower
Vervaeaneana.....	spring	large ; salmon rose on white back-ground ; double	fast grower to tree size
		white form ; double ; sometimes red striped	long season
Vervaeaneana Alba.....	spring		
Vervaeaneana Rosea.....	spring	pink form ; double	long season
Violacea.....	early to late	royal purple ; double	flowers in clusters over plant
	spring		
William Van Orange.....	early spring	single orange	unusually fine orange



**Table 10—SOME POPULAR KURUME AZALEAS\***

Variety	Color and type of flower
Apple Blossom (Howo).....	apple-blossom pink; single
Avalanche.....	pure white
Bridesmaid.....	bright salmon; single
China Sea.....	carmine rose; medium double
Christmas Cheer.....	bright red; double; early
Coral Bells.....	coral pink; small double; early; boxwood-like foliage
Daphne.....	mauve; double
Daybreak (Kirin).....	deep rose shading silver
Double Mauve.....	lavender double with high center
Hinodegiri.....	ruby red; midseason
Lavender Queen.....	light lavender; late
Maidens Blush (Otome).....	blush pink
Mauve Beauty.....	mauve; hardy
Pink Pearl (Azuma Kagami)...	light pink; double; tall; midseason
Salmon Beauty.....	salmon pink; double; midseason
Snowflake (Kurenoyuki).....	white
Sunstar.....	rose pink striped carmine
Sweetheart.....	medium double; baby pink

\* Other varieties sometimes listed include: Early Dawn, Firebird, Oimatsu, Salmon King, Salmon Queen, and White Swan. Few nurseries list many Kurume azaleas.

**Table 11—SOME EXBURY AZALEAS—A SELECTED LIST**

Variety	Color
Balzac.....	red with flame markings
Basilisk.....	creamy yellow bud opens to cream with golden flare
Berry Rose.....	medium pink
Brazil.....	tangerine red
Cecile.....	salmon pink with yellow flare; large
Firefly.....	deep orange
Frills.....	orange red; frilled
George Reynolds.....	rich yellow
Ginger.....	tangerine orange
Hotspur A.M.....	flame red
Knighthood.....	bright orange
Pink Delight.....	clear deep pink
Royal Lodge.....	large red
Tangiers.....	tangerine



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